ROBOTIC MATERIAL REMOVAL SYSTEM

CHAMFERING, DEBURRING, BUFFING, GRINDING, FLASH REMOVAL & MORE

- REDUCES OPERATING COSTS BY INTEGRATING AUTOMATION
- ELIMINATES CHANGEOVER REQUIREMENTS FOR ONE PART CONFIGURATION TO THE NEXT & AUTOMATIC TOOL CHANGEOVERS BETWEEN OPERATIONS
- OVERCOMES ANGLE VARIATION WITH REAL TIME FLEXIBLE PART VERIFICATION THROUGH VISION SYSTEM IDENTIFICATION AND FEEDBACK
- LASER SENSOR FINDS FINAL PART LOCATION AND POSITIONS ROBOT TO MAINTAIN CONSISTENT CUT PENETRATION / DEPTH
- ANALOG FORCE FEEDBACK DEVICE PROVIDES MONITORING TO ENSURE CONSISTENCY OF THE CUT AND PREDICT EXCESSIVE WEAR OF THE CUTTING TOOL
- MADE IN THE USA

Taylor-Winfield has a long and substantial history of providing the most advanced material removing, buffing and grinding automated systems to the metal processing industry, and this **Robotic Chamfering System** is no exception. By adding this flexible system to your production facility, you can dramatically improve the reliability, repeatability, accuracy and safety of the deburring process. This system can include single or multiple robots that can be customized to your application and facility requirements.

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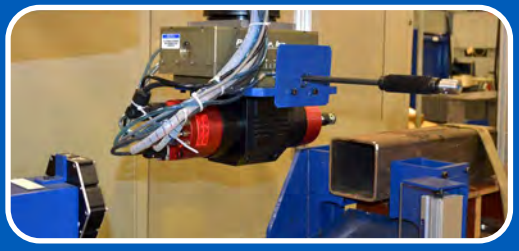
System Sequence

1. The integrated robotic chamfering system receives line data from the pipe mill level 2 system which determines the expected size and shape of the part to be cut. This is confirmed prior to the cutting operation via vision system which confirms the part is within expected tolerance. Out of tolerance parts are flagged to be processed out of the line.
2. The robot uses this data to select the correct cutting tool from the tool changing station, completing a changeover if necessary.
3. The part to be chamfered is clamped in position. A laser sensor detects the final stop position of the part to position the robot to begin its cut. The vision system takes a picture of the part and calculates the cutting path for the ID & OD chamfer. This accounts for any out of roundness, or non-concentric holes to ensure a consistent cut.
4. The robot automatically performs a programmable uniform ID & OD cut.
5. After the cut sequence is complete, another 360 degree vision inspection is taken to verify the chamfering operation has been completed.
6. The robot rotates the tube blow out tooling into the inside of the tube and completes the chip blow out procedure.
7. A tool change stand holding additional tools enables the robot(s) to automatically change the cutting tool at predetermined intervals.
8. The finished product is then unclamped and the transfer system moves the product out of the station and the next product is moved in for deburring.

VISION IDENTIFICATION

TOOL CHANGING STATION



FLEXIBLE PART VERIFICATION

Electrical Features:

- Robot controller package with integrated I/O and analog controlling features
- Optional programmable logic controller (PLC) and operator interface screen (HMI) for machine
- Vision system
- Laser displacement sensor
- Safety laser scanner

Mechanical Features:

- 6 axis robot
- Force feedback mechanism (Push-Pull)
- Tube blow out
- Automatic clamping mechanism
- Tool change station
- High speed electric cutting spindle with automatic tooling changeover
- Water cooling system for the cutting head
- Chip collection pan

Available Data Points for ERP System:

- Outside diameter
- Inside diameter (if pipe)
- Product material
- Spindle cutting tool speed in rpm
- Chamfer feed rate (cutting traverse speed)
- Cut direction (clockwise or counter clockwise)
- Additional 360 degree cut if requested for deeper chamfer
- Cutting force in the axial direction of the pipe

AUTOMATED ASSEMBLY | RESISTANCE WELDING | LINEAR FRICTION WELDING | COIL JOINING | ARC WELDING | INDUCTION HEATING